olefin/ethylenically unsaturated ester copolymers, polyesters, polyethers, polyether/polyester copolymers and mixtures thereof. Examples of such polymers are: polyethylene (PE), in particular linear low-density PE (LLDPE); polypropylene (PP); propylene/ethylene thermoplastic copolymers; ethylene/propylene rubbers (EPR) or ethylene/propylene/diene rubbers (EPDM); natural rubbers; butyl rubbers; ethylene/vinyl acetate (EVA) copolymers; ethylene/methyl acrylate (EMA) copolymers; ethylene/ethyl acrylate (EEA) copolymers; ethylene/butyl acrylate (EBA) copolymers; ethylene/α-olefin copolymers, and the like.

Alternatively, a self-extinguishing cable which can be made according to the present invention can consist of a conductor coated directly with the flame-retardant composition, without interposition of other insulating layers. In this way, the flame-retardant coating also functions as an electrical insulator. A thin polymer layer which functions as an anti-abrasive agent, optionally combined with a suitable pigment in order to give a coloration for identification purposes, can then be added externally.

Preparation of the flame-retardant compositions

The flame-retardant compositions were prepared in a closed Banbury mixer (mixing chamber volume: 1200 cm^3) filled to a volumetric level of 95 %. The mixing was carried out in two phases. In the first phase, the components of the compound, with the exception of the dehydrating agent, were mixed together until a temperature of about 200°C was reached, so as to ensure good dispersion of the components and to reduce the amount of moisture present in the filler. The dehydrating agent was then added, while keeping the mixing temperature at about 200°C.

Mechanical properties

Self-extinguishing cables were produced by extruding the compositions prepared as described above

on a wire of red copper (cross-section 2.5 mm^2) in an extruder with a cylinder 120 mm in diameter and with a length equal to 25 diameters (final thickness of the flame-retardant layer: 0.8 mm). The temperature of the composition in the extruder was kept at about 250°C, with an extrusion rate of 900 m/min.

The flame-retardant coatings thus obtained were subjected to mechanical tensile strength tests according to CEI standard 20-34 § 5.1. The results are given in Table 1, as the average value obtained over five samples taken at random from each cable produced. All of the cables produced passed the flame-resistance test according to IEC standard 332-1, which consists in subjecting a 60 cm long sample, placed vertically, to the direct action of a Bunsen-burner flame applied for 1 min at an angle of 45° relative to the sample.

TABLE 1

Example	1	2	3	4 (*)	5	6 (*)
Engage® 8003	85	85	85	85	85	85
Moplen® EP1X35HF	15	15	15	15	15	15
Hydrofy® G 1.5	210	210	210	210	--	--
Hydrofy® G 1.5S	--	--	--	--	210	210
Peroximon® DC40	0.4	0.4	0.4	0.4	0.4	0.4
Silquest® A-172	1.8	1.8	1.8	1.8	1.8	1.8
Irganox® 1010	0.8	0.8	0.8	0.8	0.8	0.8
Irganox® MD1024	0.3	0.3	0.3	0.3	0.3	0.3
Stearic acid	1.5	1.5	1.5	1.5	1.5	1.5
Kezadol® GR	2	6	10	--	6	--
Mechanical properties on cable extruded at 900 m/min						
Breaking load (MPa)	14.0	13.8	12.2	14.2	13.5	13.0
Elongation at break (%)	122	140	159	90	157	105

(*) comparative

Engage® 8003 - ethylene/1-octene copolymer obtained by metallocene catalysis: